FOXBOX HDMI

FIBER OPTIC EXTENDER FOR HDMI, AUDIO, AND RS-232

- **Extends HDMI video, stereo audio, and RS-232 control signals very long distances over fiber optic cable**
- **All digital, zero compression technology for high performance signal transmission**
- **Pixel-for-pixel image quality, up to 1920x1200, including HDTV 1080p/60**
- **HDMI 1.3 compatible**
- **HDCP compliant**
- **Key Minder™**
- **EDID Minder®**
- **Audio embedding with gain, attenuation, and muting control**
- **HDMI audio de-embedding with analog stereo outputs**
- **Buffered HDMI input loop-through**
- **Auto Input Memory**
- **Available as 850 nm multimode and 1310 nm singlemode models**

FOXBOX Tx HDMI

FOXBOX Rx HDMI

The Extron FOXBOX HDMI is a fiber optic extender for long haul transmission of HDCP-compliant HDMI video, audio, and RS-232 control signals over fiber optic cable. Engineered for reliability and exceptional high resolution image performance, it uses Extron-exclusive all digital, zero compression technology. The FOXBOX HDMI also includes a host of features for easier and quicker AV system integration.

DESCRIPTION

The Extron **FOXBOX HDMI** Fiber Optic Extender is a transmitter and receiver set for long haul transmission of HDCP compliant HDMI video, audio, and RS-232 control signals over fiber optic cable. Engineered for reliability and exceptional high resolution image performance, it uses Extron-exclusive all digital, zero compression technology to deliver perfect pixel-for-pixel transmission of HDMI video images up to 1920x1200 resolution, including HDTV 1080p/60. The FOXBOX HDMI also includes EDID Minder®, Key Minder™, Auto Input Memory, RS-232 control from multiple locations, internal test patterns, and real-time system monitoring. Compact, low profile enclosures allow for discreet installation behind a flat-panel display.

Part of the larger, comprehensive FOX Series of fiber optic products from Extron, the FOXBOX HDMI is compatible with FOXBOX, FOX 500, and PowerCage™ FOX DVI Plus, DVI, and VGA extenders. The FOXBOX HDMI transmitter and receiver can be used for simple point-to-point applications or in combination with FOX Series distribution amplifiers, switchers, and matrix switchers for enterprise wide distribution of HDCP-compliant HDMI video.

The transmitter and the receiver can be controlled and configured using the RS-232 port on the FOXBOX HDMI transmitter. Functions for both units can be controlled at either location. Since the units are typically situated far apart, this capability adds considerable versatility, enabling adjustment and calibration of audio at the receiver. It also allows for verification of fiber link status between the units as well as the presence of HDMI and audio input signals at the transmitter.

The FOXBOX HDMI is ideal for a wide range of applications requiring long distance transmission of high resolution content with the highest quality. Because transmission of content is inherently secure and immune to outside interference, fiber applications are favored in government, military, and medical environments. The FOXBOX HDMI transmitter and receiver feature industry standard LC-type connectivity.

FEATURES

- **Extends HDMI video, stereo audio, and RS-232 control signals very long distances over fiber optic cable**
- **All digital, zero compression technology provides pixel-for-pixel performance with signals up to 1920x1200, including HDTV 1080p/60**
- **HDMI 1.3 compatible**
- **HDCP compliant** – Ensures display of content protected media and interoperability with other HDCP-compliant devices.
- **Key Minder™** – Continuously authenticates HDCP-compliant input and output devices to ensure quick and reliable switching in professional AV environments.
- **HDCP Visual Confirmation** – The FOXBOX HDMI extender outputs a full-screen green signal when HDCP-encrypted content is sent to a non-HDCP compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.
- **EDID Minder®** – Automatically manages EDID communication between the source and the display, ensuring that the source powers up properly and reliably outputs content to the display.

FEATURES (Cont.)

- **Buffered HDMI input loop-through** – A buffered HDMI input loop-through on the FOXBOX HDMI transmitter provides an output signal to drive a local monitor.
- **Audio embedding with gain, attenuation, and muting control** – A DIP switch on the transmitter front panel enables selection of analog audio input or digital HDMI audio. When the analog input is selected, analog stereo audio signals are converted to digital HDMI audio.
- **HDMI audio de-embedding with analog stereo outputs** – Digital HDMI audio is made available as a balanced or unbalanced analog stereo signal on captive screw connectors.
- **Selectable HDMI audio pass-through** – The user can control whether the HDMI output passes audio signal by setting a toggle switch on the rear panel of the receiver.
- **Available as an 850 nm multimode model for moderate-range transmissions, and a 1310 nm singlemode model for extreme distances up to 30 km (18.75 miles)**
- **Industry standard LC connectors provide reliable physical connectivity and precise fiber core alignment**
- **Alarm notification for fiber link loss** – The FOXBOX HDMI transmitter or receiver can be set up to trigger an external control system for immediate notification when a fiber link has been lost.
- **Auto Input Memory** – When activated, the FOXBOX HDMI receiver automatically stores position and detail settings based on the incoming signal. When that signal is detected again, the proper image settings are automatically recalled from memory.
- **30 user memory presets** – In addition to Auto Memory, 30 user memory presets on the FOXBOX HDMI receiver are available to save and recall the position and detail information for multiple incoming sources. The ability to save and recall presets is useful in switcher-based environments.
- **RS-232 control at transmitter and receiver** – The FOXBOX HDMI transmitter and receiver feature RS-232 serial ports for control and configuration.
- **Real-time status LED indicators for troubleshooting and monitoring** – Front and rear panel LEDs verify signal presence, HDCP authentication, link status, and power.
- **Internal test patterns for calibration and setup** – Three test patterns are available, including grayscale, color bars, and alternating pixels.
- **Auto-Image™ automatically optimizes output** – When paired with the FOXBOX VGA or FOX 500 transmitter for sending analog RGB signals, a press of a button automatically adjusts the sizing, centering, and filtering to optimize the output image. This can save time and effort in fine tuning displayed images.
- **Compatible with FOX Series distribution amplifiers, switchers, and matrix switchers** – Enables enterprise wide distribution of HDCP-compliant HDMI video.
- **Compatible with FOX 500, FOXBOX, and PowerCage FOX DVI Plus, DVI, and VGA transmitters and receivers**
- **1" (2.5 cm) high, mountable metal enclosures** – Transmitter: quarter-rack width, Receiver: half-rack width

SPECIFICATIONS

NOTE: These transceivers are class 1 laser products. They meet the safety regulations of IEC-60825, FDA 21 CFR 1040.10, and FDA 21 CFR 1040.11.

OPTICAL FIBER INTERCONNECTION BETWEEN TRANSMITTER AND RECEIVER

Number/type	2 fiber optic
Connectors	2 LC connectors
Operating distance	
Singlemode	30 km (18.75 miles) with singlemode (SM) cables with a FOXBOX SM
Multimode	300 m (985') with 62.5 µm multimode (MM) cables with a FOXBOX MM 1 km (3280') with 50 µm multimode (MM) cables with a FOXBOX MM 2 km (6561') with 50 µm 2000 MHz bandwidth laser optimized multimode cable with a FOXBOX MM

NOTE: Operating distance is approximate. These are typical maximum distances that may vary depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks.

Nominal peak wavelength	850 nm for FOXBOX MM, 1310 nm for FOXBOX SM
Data rate	4.25 Gbps
Transmission power	
Singlemode	-5 dBm, typical
Multimode	-5 dBm, typical
Maximum receiver sensitivity	
Singlemode	-18 dBm, typical
Multimode	-12 dBm, typical
Optical loss budget	
Singlemode	13 dB, maximum
Multimode	7 dB, maximum

VIDEO

NOTE: *Appropriate HDMI to DVI-D cables or adapters are required for DVI signal input/output.

Resolution range	Up to 1920x1200 or 1080p @ 60 Hz pixel for pixel
Formats	RGB, YCbCr, and xvYCC digital video
EDID	Supports emulation of custom or factory preset Extended Display Identification Data (EDID) tables.
HDCP	Compliant with High-bandwidth Digital Content Protection (HDCP) using DVI and HDMI 1.3 standards
Standards	DVI 1.0, HDMI 1.3, HDCP 1.1, CEA-861E

VIDEO INPUT

Number/signal type	1 single link HDMI
Connectors	1 female HDMI type A
Equalization	Automatic for up to 50' (15 m) of cable

VIDEO OUTPUT

Number/signal type	1 single link HDMI
Connectors	1 female HDMI type A
Nominal level	0.8 Vp-p
Video delay	1-2 frames

AUDIO

Gain	
Range	Adjustable, -18 dB to +10 dB
Default	Unbalanced output: 0 dB
Frequency response	20 Hz to 20 kHz, ±0.5 dB
THD + Noise	0.10% @ 1 kHz at nominal level
S/N	>80 dB at maximum output (unweighted)
CMRR	65 dB @ 20 Hz to 20 kHz
Audio bits per sample	18 bits per channel, 2 channels (L, R)
Sampling rate	48 kHz

AUDIO INPUT — TRANSMITTERS

Number/signal type	1 unbalanced stereo or 2 unbalanced mono
Connectors	(1) 3.5 mm mini stereo jack
Impedance	18k ohms unbalanced, DC coupled
Nominal level	-10 dBV (316 mVrms)
Maximum level	+8.9 dBV, (unbalanced) at 1% THD+N

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT — RECEIVERS

Number/signal type	1 unbalanced stereo or 2 unbalanced mono
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced
Nominal level	-10 dBV (316 mVrms)
Maximum level (Hi-Z)	+7.6 dBu, unbalanced at 1% THD+N
Maximum level (600 ohm)	>+6.3 dBu, unbalanced at 1% THD+N
Audio delay	1.5 frames

CONTROL/REMOTE

Serial control ports on each unit (transmitter and receiver)	
Control	1 RS-232, 2.5 mm mini stereo jack (front panel)
Pass-through	1 RS-232, 3.5 mm captive screw connector, 5-pole (3 pins are used) (rear panel)
Baud rate and protocol	
Control	9600 baud, 8 data bits, 1 stop bit, no parity
Pass-through	9600 to 115,200 baud
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™)

GENERAL

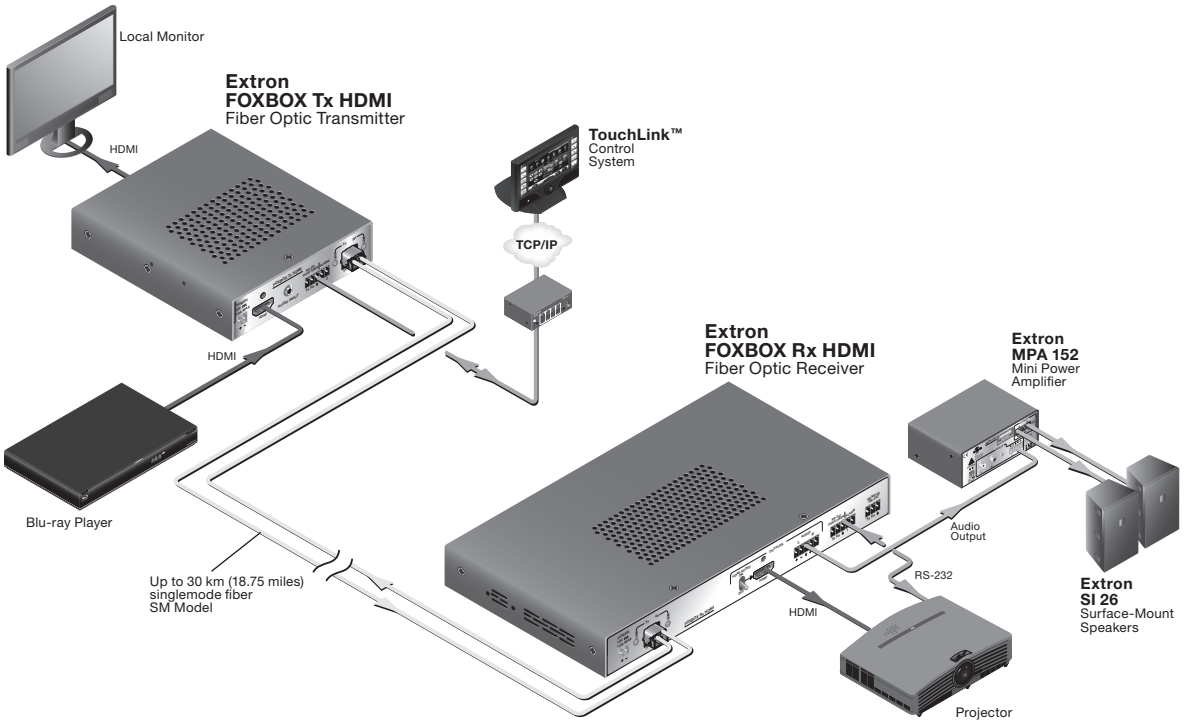
External power supply	100 VAC to 240 VAC, 50-60 Hz, external; to 12 VDC, 1 A, regulated
Power input requirements	12 VDC, 0.6 A
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, vents on top and side panels
Thermal dissipation	
Transmitter	
115 VAC, 60 Hz	2.9 BTU/hr
240 VAC, 50 Hz	4.0 BTU/hr
Receiver	
115 VAC, 60 Hz	2.7 BTU/hr
240 VAC, 50 Hz	3.9 BTU/hr
Mounting	
Rack mount	Yes, with optional rack shelf
Furniture mount	Yes, with optional under desk mounting kit
Enclosure type	Metal
Enclosure dimensions	
Transmitter	1.0" H x 4.3" W x 6.0" D (quarter rack wide) (2.5 cm H x 10.9 cm W x 15.2 cm D) (Depth excludes connectors.)
Receiver	1.0" H x 9.5" W x 6.0" D (half rack wide) (2.5 cm H x 24.1 cm W x 15.2 cm D) (Depth excludes connectors and switch.)
Product weight	
Transmitter	0.7 lbs (0.3 kg) per unit
Shipping weight	
Transmitter	3 lbs (2 kg) per unit
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, FDA Class 1, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

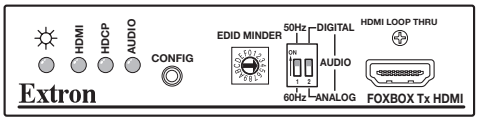
Model	Version Description	Part number
FOXBOX Tx HDMI MM	Multimode - Transmitter	60-1174-11
FOXBOX Tx HDMI SM	Singlemode - Transmitter	60-1174-12
FOXBOX Rx HDMI MM	Multimode - Receiver	60-1174-21
FOXBOX Rx HDMI SM	Singlemode - Receiver	60-1174-22

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

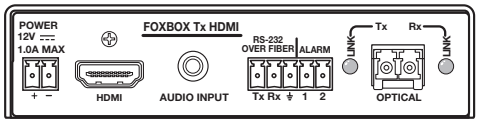
APPLICATION DIAGRAM



PANEL DRAWINGS



FOXBOX Tx HDMI - Front



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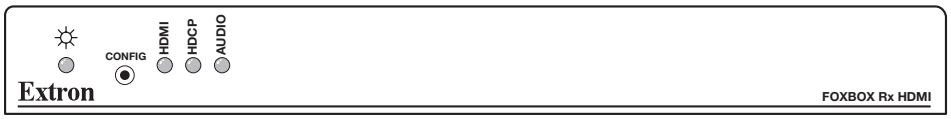
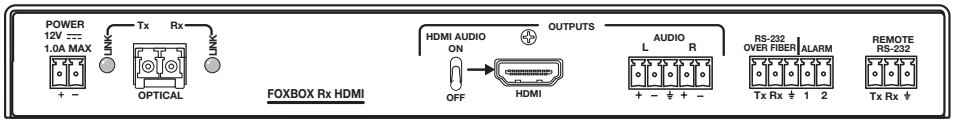


FOXBOX Rx HDMI - Front



FOXBOX Rx HDMI - Back

Extron **USA - West**
Headquarters
+800.633.9876
Inside USA / Canada Only
+1.714.491.1500
+1.714.491.1517 FAX

Extron **USA - East**
+800.633.9876
Inside USA / Canada Only
+1.919.863.1794
+1.919.863.1797 FAX

Extron **Europe**
+800.3987.6673
Inside Europe Only
+31.33.453.4040
+31.33.453.4050 FAX

Extron **Middle East**
+971.4.2991800
+971.4.2991880 FAX

Extron **Asia**
+800.7339.8766
Inside Asia Only
+65.6383.4400
+65.6383.4664 FAX

Extron **Japan**
+81.3.3511.7655
+81.3.3511.7656 FAX

Extron **China**
+400.883.1568
Inside China Only
+86.21.3760.1568
+86.21.3760.1566 FAX

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